

REMARKSIN THE CLAIMS:

Applicants respectfully request the Examiner to cancel without prejudice original Claims 1 – 10 and 12 – 18 and to enter amendments to Claims 39, 51 – 55, 64, and 66, as shown below.

## PREVIOUSLY PRESENTED CLAIM 39 IS AMENDED AS FOLLOWS:

In line 2 of the claim, the word “bulk” BEFORE the word “filler” is DELETED. The change is made at the suggestion of the Examiner to remove a source of indefiniteness in that the term is deemed a “relative” term.

In line 16 of the claim presented herein, the word “a” AFTER the words also maintaining” and BEFORE the words “mechanical compressive strength” is DELETED and REPLACED with the words -- an average --; and in lines 16 and 17 of the claim presented herein the words “at least 60% of a mechanical compressive strength measured at room temperature” are DELETED and REPLACED with the word -- about 25 MPa --. The change is made to better describe the invention. Support is found in TABLE 4 of the present application.

## PREVIOUSLY PRESENTED CLAIM 51 IS AMENDED AS FOLLOWS:

In line 2 of the claim, the word “bulk” BEFORE the word “filler” is DELETED. The change is made at the suggestion of the Examiner to remove a source of indefiniteness in that the term is deemed a “relative” term.

## ORIGINAL CLAIM 52 IS AMENDED AS FOLLOWS:

In line 1 of the claim, the word “bulk” BEFORE the word “filler” is DELETED. The change is made at the suggestion of the Examiner to remove a source of indefiniteness in that the term is deemed a “relative” term.

ORIGINAL CLAIM **53** IS AMENDED AS FOLLOWS:

In line 1 of the claim, the word “bulk” BEFORE the word “filler” is DELETED. The change is made at the suggestion of the Examiner to remove a source of indefiniteness in that the term is deemed a “relative” term.

ORIGINAL CLAIM **54** IS AMENDED AS FOLLOWS:

In line 1 of the claim, the word “bulk” BEFORE the word “filler” is DELETED. The change is made at the suggestion of the Examiner to remove a source of indefiniteness in that the term is deemed a “relative” term.

ORIGINAL CLAIM **55** IS AMENDED AS FOLLOWS:

In line 1 of the claim, the word “bulk” BEFORE the word “filler” is DELETED. The change is made at the suggestion of the Examiner to remove a source of indefiniteness in that the term is deemed a “relative” term.

ORIGINAL CLAIM **64** IS AMENDED AS FOLLOWS:

In line 2 of the claim, the word “bulk” BEFORE the word “filler” is DELETED. The change is made at the suggestion of the Examiner to remove a source of indefiniteness in that the term is deemed a “relative” term.

In line 15 of the claim presented herein, the word “a” AFTER the words also maintaining” and BEFORE the words “mechanical compressive strength” is DELETED and REPLACED with the words -- an average --; and in lines 16 and 17 of the claim presented herein the words “at least 60% of a mechanical compressive strength measured at room temperature” are DELETED and REPLACED with the word -- about 25 MPa --. The change is made to better describe the invention. Support is found in TABLE 4 of the present application.

ORIGINAL CLAIM **66** IS AMENDED AS FOLLOWS:

In lines 1 and 2 of the claim presented herein, the words “comprising the light weight polyisocyanurate foam structure of claim 12” are DELETED and REPLACED with the

words -- made by the process of claim 39 -- ". The change is made to account for the cancellation of Claim 12. Support is found in the inherency of originally filed claims 66 and 67.

Applicants assert that no new matter was included as the result of the foregoing amendment.

REMARKS

REJECTION UNDER 35 U.S.C. §112

*Examiner's Remarks*

Claims 2 – 10, 12 – 18, 39 – 59, and 64 – 66 are rejected under 35 U.S.C. §112, second paragraph as being indefinite for failing to particularly point out and distinctly claim the subject matter which the applicant regards as the invention, in that:

*"Claims 2-10 and 12-18 recite the limitation "the light-weight polyisocyanurate foam structure of claim ... " in the preamble. There is insufficient antecedent basis for this limitation in the claims.*

*Claim 1 is directed towards a reaction mixture and does not provide the required antecedent basis for the further defined "light-weight polyisocyanurate foam structure" set forth in the claims that depend from it.*

*Claims 1-10, 12-18, 39-59, and 64-66 are rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention.*

*The term "bulk" in claims 1, 39, and 64 is a relative term which renders the claim indefinite. The term "bulk" is not defined by the claim, the specification does not provide a standard for ascertaining the requisite degree, and one of ordinary skill in the art would not be reasonably apprised of the scope of the invention. It can not be determined what filler materials are intended to be included and/or excluded by the term "bulk".*

*Applicants' Response*

Applicants wish to thank the Examiner for his remarks.

Regarding Claims 1 – 10 and 12 – 18, Applicants have requested that be canceled and therefore assert that the rejection under 35 U.S.C. §112, second paragraph with regard to these claims is moot.

Regarding Claims 39 – 59 and 64 – 66 Applicants note that they have amended their Claims 39, 51 – 55, and 64 to remove the limitation "bulk" but note that the term "filler" is used throughout the specification to identify a wide assortment of materials (see particularly paragraph [0027]).

Therefore, in making the above changes, Applicants assert that they have cured the Examiner's rejection under 35 U.S.C. §112, second paragraph and respectfully request that he reconsider and withdraw his rejection and pass these claims to allowance.

REJECTION UNDER 35 U.S.C. §103(a)

***Examiner's Remarks***

Claims 1 – 10, 12 – 18, 39 – 59, and 64 – 66 are rejected under 35 U.S.C. §103(a) as being unpatentable over Hayash, Jr. et al.(U.S. Patent Serial No. 3,673,128), alone, or in view of Fuzesi et al.( U.S. Patent Serial No.4,699,931) and/or Whinnery et al. TEPIC document (Whinnery et al.), in that:

“ Hayash, Jr. et al. discloses preparations of oxazolidone-modified isocyanurate foams prepared by mixing and reacting polyisocyanates and epoxide resins in the presence of catalysts, surfactants, blowing agents inclusive of water and other propellants, and additives (see abstract, column 2 line 10- column 8 line 50, as well as, the entire document). Hayash, Jr. et al. discloses combination of the epoxy resins and polyisocyanates in amounts meeting the ranges of combinational values set forth by applicants' claims. Further, regarding the product-by-process recitations of applicants' claims, the resultant epoxy resin/polyisocyanate based foamed polymers of Hayash, Jr. et al. are of a formed structure having no apparent factually supported, non-obvious differences from the formed products of applicants' claims that burden is upon applicants' to demonstrate any unobvious differences in the product which may be evident based on the process recitations of the claims.

Hayash, Jr. et al. differs from applicants' claims in that combinations of tertiary amine catalysts inclusive of cyclic amines are not required or, specifically, blends of 2,4,6-tris(dimethylaminomethyl)phenol and N,N-dimethylcyclohexylamine and/or relative amounts values as claimed. However, Hayash, Jr. et al. (see column 7 lines 47 and 55) discloses employment of these compounds in the preparations of Hayash, Jr. et al. for the purpose of imparting their reaction catalyzing effects. Accordingly, it would have been obvious for one having ordinary skill in the art to have employed the disclosed 2,4,6-tris(dimethylaminomethyl)phenol and N,N-dimethylcyclohexylamine catalyst of Hayash, Jr. et al. in combinations of varied respective individual contents within the teachings of Hayash, Jr. et al. for the purpose of imparting their disclosed reaction catalyzing effects in order to arrive at the products of applicants' claims with the expectation of success in the absence of a showing of new or unexpected results. Additionally, regarding the blending of the tertiary amine with the cyclic

amine, it has been held that is *prima facie* obvious to combine two compositions, each of which is taught by the prior art to be useful for the same purpose, in order to form a third composition to be used for the very same purpose. *In re Kerkhoven* 205 USPQ 1069. The idea for combining said compositions flows logically from their having been individually taught in the prior art. *In re Crockett* 126USPQ 186, 188. Relatedly, the fact that a first component is in no way related to the second component, but where each has the same utility, does not detract from the obviousness of combining them. *In re Linder*, 457 F.2d 506, 507 (CCPA 1972). (Holding that it would have been obvious to combine two known dispersants, since one skilled in the art would have expected a mixture of such dispersants to also be a dispersant).

Hayash, Jr. et al. differs from applicants' claims in that glycidyl ethers of Bisphenol A or F are not particularly required. However, Hayash, Jr. et al. indicates these materials to be acceptable members of one of the preferred groups of members used in the practice of their invention(see column 4 line 32-34 and column 6 lines 69- 70). Accordingly, it would have been obvious for one having ordinary skill in the art to have employed glycidyl ethers of Bisphenol A or F disclosed by Hayash,Jr. et al. in the making of the preparations of Hayash, Jr. et al. for the purpose of imparting their epoxy resin functional effect in order to arrive at the products of applicants' claims with the expectation of success in the absence of a showing of new or unexpected results. It is *prima facie* obvious to substitute equivalents, motivated by the reasonable expectation that the respective species will behave in a comparable manner or give comparable results in comparable circumstances. *In re Ruff* 118 USPQ 343; *In re Jeze/158* USPQ 99; the express suggestion to substitute one equivalent for another need not be present to render the substitution obvious. *In re Font*, 213 USPQ 532. Additionally, though epichlorohydrin is not particularly recited to be the species used in the glycidylation of the polynuclear phenols of Hayash, Jr. et al. such is not seen to be a point of distinction as Hayash, Jr. et al. recites their materials to be glycidyl ethers and difference based on the formed epoxy resin is not seen or demonstrated in fact. Regardless, column 5 lines 3-5 of Hayash, Jr. et al. demonstrates epichlorohydrin to be a conventional means of converting non-fused phenols to glycidyl ethers. Accordingly, employment of this species in the making of the Bisphenol glycidyl ethers of Hayash, Jr. et al. with the expectation of success in the absence of a showing of new or unexpected results.

Hayash, Jr. et al. further differs from applicants' claims in that additives as claimed are not particularly employed. However, Hayash,Jr. et al. does disclose the employment of additives in their preparations (column 8 lines 37-40), and Fusezi et al. (see column 11 line 63 - column 12 line 2) and Whinnery et al. (pages 8-10) disclose the employment of various fillers inclusive of the inorganic and organic fillers, acrylonitrile copolymers, and glass microbeads of applicants' claims in the making of closely related foam preparations for the purpose of imparting their bulking and strengthening



*effects. Accordingly, it would have been obvious for one having ordinary skill in the art to have employed the additive/filler materials of Fusezi et al. and Whinnery et al. in the preparations of Hayash, Jr. et al. for the purpose of imparting their bulking and strengthening effects in order to arrive at the products of applicants' claims with the expectation of success in the absence of a showing of new or unexpected results."*

### ***Applicants' Response***

Applicants again wish to thank the Examiner for his remarks but again respectfully disagree with his both his remarks and his conclusion regarding Claims 1 – 18, 39 – 59, and 64 – 67. However, because Applicants believe that they have reached an impasse with the Examiner with regard to their claims to the polyisocyanurate reaction mixture, Applicants respectfully request that Claims 1 – 18 be canceled without prejudice in order to separate these claims in continuation application for an eventual appeal while continuing the prosecution of their remaining product-by-process claims 39 – 59 and 64 – 67 in the present action before the Examiner.

Applicants note that and because they find no references cited in the record other than Hayash, Jr. (3,673,128), Fuzesi et al. (4,699,931) and Whinnery, et al. (TEPIC) Applicants will proceed under the assumption that these are the only references found to be pertinent with regard to product-by-process Claims 39 – 59 and 64 – 67. Accordingly, Applicants direct their comments to these references as follows:

I. Examiner states that *"regarding the product-by-process recitations of applicants' claims, the resultant epoxy resin/polyisocyanate based foamed polymers of Hayash, Jr. et al. are of a formed structure having no apparent factually supported, non-obvious differences from the formed products of applicants' claims that burden is upon applicants' to demonstrate any unobvious differences in the product which may be evident based on the process recitations of the claims"*. Applicants assert that the Examiner has mischaracterized the Applicants' invention: Applicants product-by-process claims 39 and 64 recite *"... a post-cured polyisocyanurate foam tool capable of sustaining prolonged exposure to temperatures up to about 200°C while also maintaining an average mechanical compressive strength of about 25 MPa"* (emphasis added).

Since 25 MPa converts to about 3600 psi and because neither Hayash, Jr., et al. nor Fuzesi, et al. teach or suggest foam structures having compressive strengths above about 48 psi (0.33 MPa) (see TABLES I and III in cols. 10 and 11 in Hayash, Jr. et al., and TABLE I below cols. 13 and 14 in Fuzesi, et al.), it is clear that the present invention describes a structure having a compressive strength nearly two orders of magnitude greater than that of the prior art. As such, Applicants assert that their product-by-process claims do, in fact, demonstrate a factually supported (see TABLES 3 and 4 of the instant application) and non-obvious difference not found in the prior art.

Finally, while Whinnery, et al. (TEPIC) disclose a cellular polymer body having a compressive strength of about 25 MPa, Whinnery, et al. (TEPIC) do not teach mixing a cyclic amine catalyst together with a tertiary amine as recited by the Applicants. Rather, Whinnery, et al. (TEPIC) teach that the reaction times of the foam were shorter than desired (page 18, second paragraph, line 1); that attempts were made to control the reaction times by minimizing the amount of catalyst used and by using the slowest trimerization catalyst currently available (page 18, second paragraph, lines 7 and 12). Applicants' invention answered to the problem of the short reaction time through the use of the two catalyst constituents. Furthermore, while the Examiner's argument for the obviousness of using two catalysts is noted, Applicants reiterate that there is no motivation provided by the prior art, or any of the chemical arts, for using a combination of catalyst. The art recognized function of the catalyst is to initiate a polymerization reaction between primary reactant constituents. A single catalyst, therefore, is all that the art recognizes as necessary and sufficient to perform this process: the use of a second catalyst, therefore, would be considered to be "over-kill". Furthermore, while the Examiner's argument that nothing in the disclosures of either Hayash, Jr., et al. or Fuzesi, et al., limits the use of more than one catalyst, Applicants assert that nothing in either patent suggest any advantage for doing so and, as recite by MPEP 2143.01 (III) "*The mere fact that references can be combined or modified does not render the resultant combination obvious unless the result would have been predictable to one of ordinary skill in the art.*" This, taken together with the art recognized function of a catalyst



already noted arguably teaches away from using multiple catalysts and would, therefore, turn aside any argument for “common sense” suggesting such use.

2. Regarding the Examiner’s assertion that “*In re Kerkhoven 205 USPQ 1069 or In re Linder, 457 F.2d 506, 507 (CCPA 1972) hold that it is prima facie obvious to combine two compositions, each of which is taught by the prior art to be useful for the same purpose, in order to form a third composition to be used for the very same purpose.*” Applicants assert that both Kerkhoven and Lindner have been misapplied. Both cases address inventions which combined known constituents A and B, both of which were used for a particular, known purpose in order to provide a third constituent which was to be used for the same purpose as the initial constituent materials. The former claimed a new detergent, while the latter claimed a dispersant. In contrast, Applicants have instead claim the reaction product formed between an isocyanate and an epoxide resin using two amine catalysts. They are not claiming a new mixed amine catalyst as would be necessary if the logic and meaning of Kerkhoven or Lindner were applied.

Regarding the Examiner’s argument that “...*The idea for combining said compositions flows logically from their having been individually taught in the prior art. In re Crockett 126USPQ 186, 188*” is assumed to mean “individually taught in the prior art” in order to provide a particular function or purpose. Crockett claimed adding known constituents A and B, both of which were separately known to be used to produce the same particular effect in a third material (forming carbon nodules in a bath of molten iron). Applicants assert that the facts of this case are quite different from the instant application. In particular, the constituents of Crockett each functioned properly to produce the intended effect *when used separately* as well as *when used in combination*. The result of using the combination, however, did not provide any particular advantage over using only one of the separate constituents. However, in the instant application, when only one of the constituent catalysts is used the foam-forming reaction was found to proceed too rapidly in the presence of water such that the foam quickly rose and then collapsed followed by only partial polymerization (see paragraph [0032]). Only when a second catalyst was introduced did the reaction proceed as intended (see paragraph

[0033]). That is, the use of the catalysts separately did not provide the desired end product. Instead, it was found that use of a combination of the two amine catalysts was a necessary condition to provide the desired end reaction product.

Therefore, for the reasons recited above, Applicants respectfully traverse the Examiner's rejection reaction mixture of Claims 39 and 64 under 35 U.S.C. §103(a) because neither Hayash, Jr., et al. ('128), Fuzesi, et al., ('931), nor Whinnery, et al. (TEPIC) either separately, or in combination provided a sufficient basis to find the present invention since none teach, disclose, or suggest adding "... a tertiary amine" and adding "... a cyclic amine" to the mixed isocyanate and epoxide resins of the present invention. That is, not all of the limitations of the instant claim can be found in the prior art as is required by MPEP §2143.

Consequently, Applicants respectfully assert that the Examiner has not met his burden for maintaining a case for *prima facie* obviousness and that they, therefore, have overcome the rejection under 35 U.S.C. §103(a) with respect to Claims 39 and 64. The Applicants, therefore, respectfully request that the Examiner reconsider and withdraw his rejection reaction mixture of claim 1 and pass this claim to allowance.

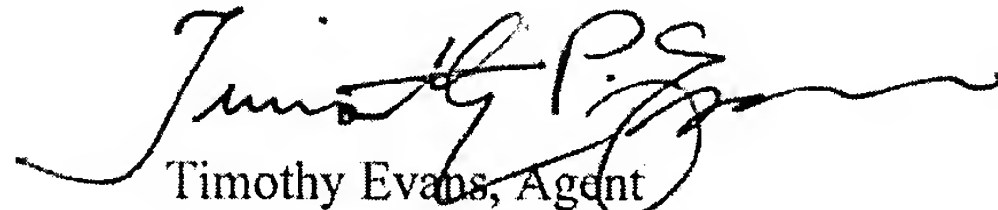
Furthermore, with regard to remaining Claims 40 – 59, 65 and 66, Applicants note that all of the prior arguments used to rebut the argument of obviousness in Claims 39 and 64 apply equally to Claims 40 – 59, 65 and 66 since each of these claims ultimately depends from either Claims 39 or 64 and must, by definition, necessarily narrow the scope of the parent claim. Consequently, Applicants assert that they have overcome the rejection under 35 U.S.C. §103(a) with respect to Claims 40 – 59, 65 and 66 in that they have removed the grounds for their rejection in that not all of the limitations of these claims can be found in the prior art. The Applicants, therefore, respectfully request that the Examiner reconsider and withdraw his rejection reaction mixture of Claims 40 – 59, 65 and 66 and pass these claims to allowance.

CONCLUSION

Applicants respectfully assert that the instant invention claims unique structure that are neither anticipated, nor suggested by the prior art. Applicants, therefore, respectfully request reconsideration of the claims now presented and earnestly solicits allowance of this application.

This response is:

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